Idleright Installation Manual

Important Notices and Warnings:

The Idleright™ Fuel Management System is designed for installation in fuel-injected vehicles with automatic transmissions only. Installation in a vehicle equipped with a manual transmission can result in property damage or personal injury. It is highly recommended that this system be professionally installed only by personnel familiar with installation of vehicle alarms and remote starting systems, as the sophistication of modern vehicles and the complexity of this product require more expertise than typical emergency vehicle installations.

- **Most vehicles have an SRS air bag system. Use extreme care and do not probe any wires of the SRS system. These wires will usually be located inside a bright yellow tube or tape and located in the steering column.**
- **Check behind panels before drilling any holes. Ensure that no wires or wiring harnesses are located behind the panels that could be damaged.**
- **Once the system is installed, it is necessary to verify that the vehicle will not start in any forward or reverse gear.**
- **Do not mount the control module until all connections have been made and the unit is programmed and tested.**
- **Place one warning sticker under the hood and one on the dashboard before the installation is completed.**
- **The Idleright Fuel Management System will NOT measure the fuel level in the vehicle's fuel tank. Ensure there is enough fuel in the tank before using the system for an extended period of time.**
- **The parking/emergency brake should always be set when the Idleright is active to ensure the vehicle does not accidentally move while unattended.**
- **Retain this manual and the operator instructions for operator reference. It is recommended to place both instructions in the vehicle glove box.**
- **Most vehicles require TWO valid keys for programming the interface module. Verify that you have TWO valid keys before beginning installation.**

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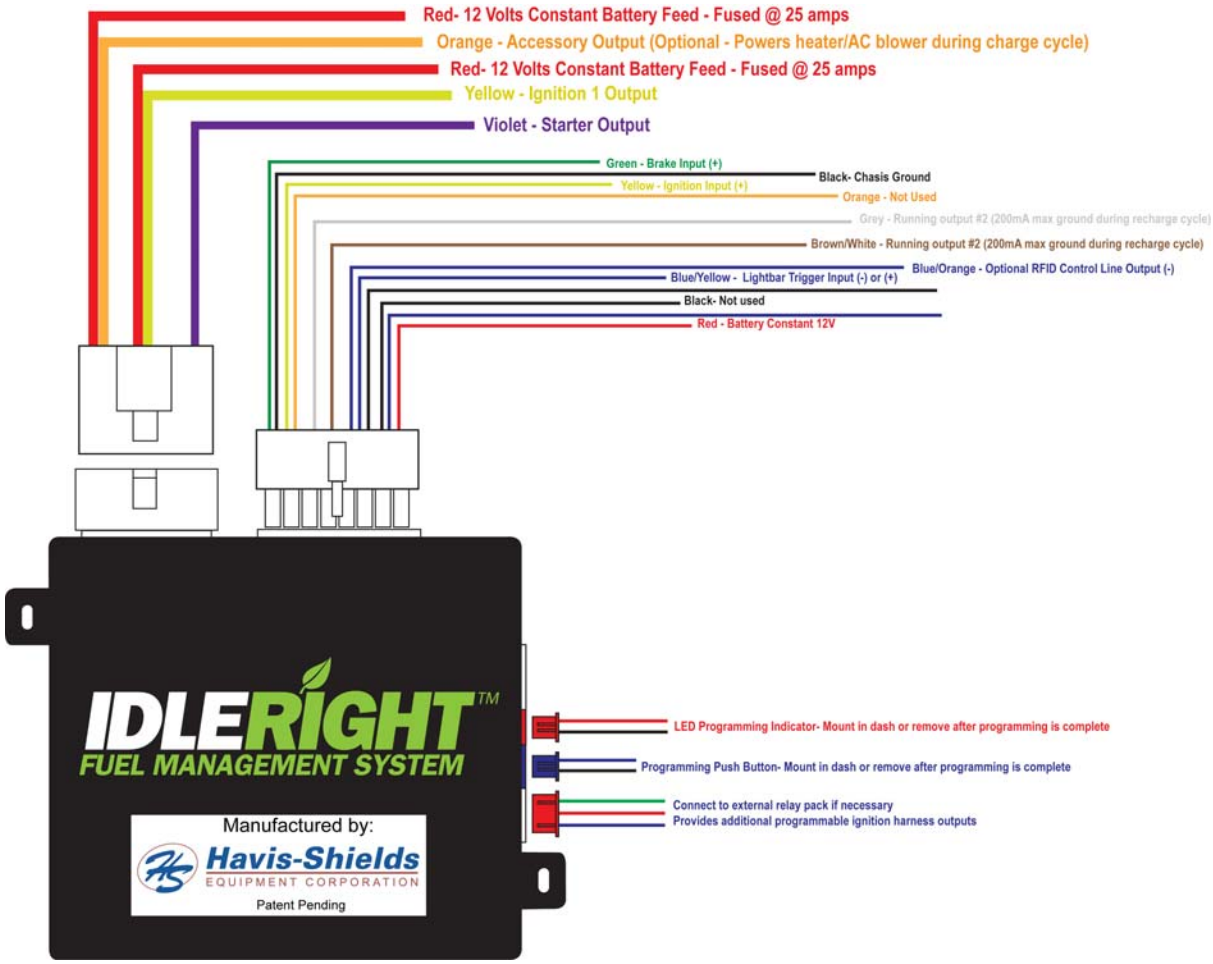
Components:

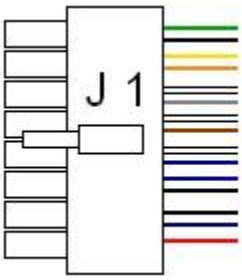
- 1 – Idleright main control module
- 1 – 16 Pin Input/Output Harness – J1
- 1 – 6 Pin Ignition Harness – J2
- 1 – 3 Pin relay harness
- 1 – Hood Switch
- 1 – 2 Pin Programming Push Button
- 1 – 2 Pin Programming LED Light Harness
- 2 – Warning Decals – for under-hood and on-dashboard use
- 1 – Window Decal
- 1 – Installation manual
- 1 – Operator Instruction Sheet
- 1 – Interface kit (Supplied separately, not for all vehicles)

Wiring Diagram:

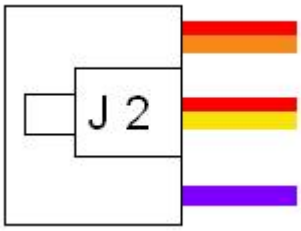
The following diagram illustrates how each wire harness connects to the Idleright unit.


Red- 12 Volts Constant Battery Feed - Fused @ 25 amps
Orange - Accessory Output (Optional - Powers heater/AC blower during charge cycle)
Red- 12 Volts Constant Battery Feed - Fused @ 25 amps
Yellow - Ignition 1 Output
Violet - Starter Output
Green - Brake Input (+)
Black- Chasis Ground
Yellow - Ignition Input (+)
Orange - Not Used
Grey - Running output #2 (200mA max ground during recharge cycle)
Brown/White - Running output #2 (200mA max ground during recharge cycle)
Blue/Yellow - Lightbar Trigger Input (-) or (+)
Blue/Orange - Optional RFID Control Line Output (-)
Black- Not used
Red - Battery Constant 12V
IDLERIGHT™
FUEL MANAGEMENT SYSTEM
Manufactured by:
Havis-Shields
EQUIPMENT CORPORATION
Patent Pending
LED Programming Indicator- Mount in dash or remove after programming is complete
Programming Push Button- Mount in dash or remove after programming is complete
Connect to external relay pack if necessary
Provides additional programmable ignition harness outputs

Wiring Harnesses:



J1	Description	Polarity	Wire Color
1	Brake Input (Safety Shutdown)	POS	Green/White
2	Ignition Input	POS	Yellow
3	Hood (Safety Shutdown)	NEG	White/Black
4	Not Used		
5	Not Used		
6	Lightbar Control Input	POS or NEG	Blue/Yellow
7	Not Used		
8	12 Volt Control Unit Input	POS (Fused)	Red
9	Control Unit Ground	NEG	Black
10	Not Used		
11	Running Output #1	NEG (200mA max.)	Grey
12	Running Output #2	NEG (200mA max.)	Brown/White
13	RFID Control	NEG	Blue/Orange
14	Not Used		
15	Not Used		
16	Running Output #3	POS (Fused 15amp)	White



J2	Description	Polarity	Wire Color
1	12V	POS (Fused)	Red
2	12V	POS (Fused)	Red
3	Accessory	POS	Orange
4	Ignition	POS	Yellow
5	Starter	POS	Violet

Vehicle Installation J1, 16-Pin Harness:

1. Green/White -- Brake input (+) – Used for both programming mode and remote safety shutdown. Connect to brake light switch when brake is pressed.
2. Yellow -- Ignition input (+) – Connect to ignition switch wire powered by 12v when ignition is on and cranking.
3. White/Black – Hood (-) – Safety pin-switch
4. NOT USED
5. NOT USED
6. Blue/Yellow – Light bar trigger input (-) or (+)
7. NOT USED
8. Red – Connect to battery constant 12v (with 20A fuse holder)
9. Black – Connect to good chassis ground
10. NOT USED
11. Gray – Running output #1 (-). Grounded output when remote start is running. (200mA max.)
12. Brown/White – Running output #2 (-). Grounded output when remote start is running. (200mA max.)
13. Blue/Orange – RFID control line output (-). Connect to external RFID bypass module control line
14. NOT USED
15. NOT USED
16. NOT USED

Vehicle Installation J2, 6-Pin Harness:

1. Red – Connect to constant 12v source (must be capable of 25A)
2. Red – Connect to constant 12v source (must be capable of 25A)
3. Orange – Connect to ignition switch ACC circuit (Air Cond/Heater, etc.)
4. Yellow – Connect to ignition switch wire powered by 12v when ignition is on and cranking.
5. Violet – Connect to starter wire powered only on cranking position.
6. NOT USED

Vehicle Installation, 3-Pin Relay Harness, White:

1. Connect to external relay pack if necessary.
    a. Relay #1 -- Purple wire to 12V fused 25A source, Blue wire to ACC, Ignition or Starter (depending on program mode)
    b. Relay #2 -- Purple wire to 12V fused 25A source, Green wire to ACC, Ignition or Starter (depending on program mode)

Vehicle Installation, 2-Pin Relay Harness, Red:

1. Plug in LED and mount in dash

Vehicle Installation, 2-Pin Relay Harness, Blue:

1. Plug in push-button switch and mount. Used for selecting program mode.

Basic Instructions:

- **The Idleright is intended for installation only by qualified personnel experienced with installation of vehicle alarms and remote starting systems. Damage to the Idleright and/or vehicle due to improper installation is not covered by the Idleright warranty.**
- **After reading this manual, start the installation by affixing one WARNING Decal to a visible area in the engine compartment, and one WARNING Decal on the dashboard!**
- **Do not attempt to install the Idleright System into a manual transmission vehicle! Doing so could cause serious property damage, personal injury, and will void all warranties!**
- **Be aware of, and avoid, any SRS airbag circuitry. The installer will not be in an upright and seated position, so severe injury may occur in an accidental airbag deployment!**
- **The use of a Digital MultiMeter (DMM) or Volt-Ohm meter (VOM) instead of a standard testlight is required.**
- **Always protect wires routed through the firewall from sharp metal edges and hot parts of the engine.**
- **Always fuse positive wires at their source.**
- **Reliable wire connections are required. Soldered wire connections are recommended, and high-quality connectors designed for vehicle use may also be acceptable. Non-permanent connectors, such as wire nuts, are never acceptable.**
- **For installation assistance, please call Technical Support at 1-800-524-9900 ext. 185 from 8:30 AM to 5:00 PM (East) M-F (except holidays) for assistance. Please note that installation assistance may only be available for supported vehicles and interface kits.**

- **Most interface kits require TWO valid keys for programming. Ensure TWO keys are available for EACH vehicle before starting installation.**

Interface Kits:

Most vehicles will require an interface kit in order to allow for installation of the Idleright unit. These interface kits are sold separately, and different kits are needed for different vehicles based upon model and model year. Please visit www.idleright.com for a list of supported vehicles and interface kits. The appropriate interface kit for each vehicle must be installed concurrently with the Idleright. Please refer to the installation instructions from the interface kit for wiring specifications, and begin wiring installation with the interface kit. Failure to install the interface kit correctly can damage the vehicle, and is not covered under warranty. Most interface kits require two valid keys for each vehicle. Please ensure two keys are available for each vehicle before beginning installation. If the installation vehicle does not require an interface kit, please proceed to the next section.

Wiring Connections:

The Idleright requires direct connection to the vehicle electrical system. Failure to make these connections correctly may damage the vehicle, and is not covered under warranty. A list of wiring connections required is shown in the Wiring Harnesses section. Please note the following special considerations:

- It is recommended that the Idleright unit be powered (J2/1 and J2/2) by direct connections to the battery, not by using any of the existing wiring harnesses under the dashboard. These connections MUST be independently fused at 25A each.

- The lightbar connection should be made to an independent/unused terminal on the lightbar control unit whenever practical. Any input above +4 VDC will be considered a positive reading.

- The indicator light and programming pushbutton should be installed where they will be visible/accessible for programming, but not accidentally pressed.

- It is recommended that a new battery be installed in older vehicles when installing the Idleright to ensure reliable operation.

- Ensure the Idleright unit is correctly connected to the interface kit, the interface kit is correctly programmed, and the Idleright unit is correctly programmed before attempting to start the vehicle using the Idleright.

Background on Idleright Programming:

The Idleright unit ships with factory defaults for a gasoline powered vehicle. These defaults are shown in the Idleright Programming Instructions below. The Idleright is suitable for use with diesel powered vehicles, and suggested settings for diesel vehicles are also shown below. Ensure programming is completed and correct before attempting to start the vehicle using the Idleright. Programming options may be changed at any time, and detection voltage and runtime may need to be increased or decreased from the defaults based upon the type of vehicle, size of load, and age of the battery. Note that returning the Idleright unit to factory defaults will return the unit to programming suitable for a gasoline vehicle.

Idleright Programming Instructions:

Steps required to program the Idleright unit:

Step 1: Turn ignition to the On/Run position.
Step 2: Within 10 Seconds, press/release programming push button 5 times. (The LED will flash 6 times rapidly to indicate entry into programming mode.)
Step 3: Press/Release Push button the same number of times of the Location in which you would like to program. For example, if programming the Engine Idle Time, press/release push button 2 times.
Step 4: When at desired location, press/release brake pedal to select the option. The LED will flash to indicate the option number you have selected. For example, to change the Engine Idle Time to 30 minutes, press/release brake pedal 4 times. The LED indicator will flash 4 times to confirm.
Step 5: When programming for that location is complete, turn ignition off. To program additional options, repeat the above sequence. If the module is left in programming mode for more than 3 minutes, the system will automatically exit programming mode.

Programming defaults are based on a typical gasoline engine and positive switched warning light system. Programming options that are outlined are the recommended settings for a typical diesel engine vehicle. Some additional programming may be required in order to fully optimize your system's efficiency.

LOCATION	DESCRIPTION	OPTION
1	Voltage Trip Point - This is the point at which the vehicle's engine will start, beginning the recharging process. **WARNING: DO NOT SET BELOW 11.0V FOR STANDARD VEHICLES. MOST VEHICLES WILL REQUIRE 11.5V – 12.0V FOR PROPER OPERATION**.	1 = 10.0 V (Not Recommended) 2 = 10.25V (Not Recommended) 3 = 10.5V (Not Recommended) 4 = 10.75V (Not Recommended) 5 = 11.0V 6 = 11.25V **7 = 11.5V (Default)** 8 = 11.75V 9 = 12.0V (Diesel) 10 = 12.25V 11 = 12.5V 12 = 12.75
2	Engine idle time **NOTE: HEAVIER LOADS REQUIRE LONGER TIMES.**	1 = 15 Min **2 = 20 Min** 3 = 25 Min (Diesel) 4 = 30 Min
3	Lightbar Polarity – Determine if the warning lights are POS switched or NEG switched and program.	1 = NEG **2 = POS (Default)**
4	Initial Crank Time – This is Length of time the Idleright System will crank the vehicle's starter. NOTE: .2 seconds of additional cranking time will be added to each start attempt. Note: 0.7 Seconds is recommended for summer season and warm climates.	1 = .7 Seconds **2 = 1.25 Seconds (Default)** 3 = 1.5 Seconds (Diesel)
5	Time Between Ignition and Starter Cranking	**1 = 5 Seconds (Default)** 2 = 10 Seconds 3 = 15 Seconds (Diesel) 4 = 20 Seconds 5 = 25 Seconds
6	Run Sense Voltage – This is the voltage increase that the the Idleright needs to see to determine the engine has started and no further start	1 = .25V **2 = .5V (Default)** 3 = 1V

attempts will be needed.

7	External Relay Pack – Relay #1	**1 = Accessory (Default)** 2 = Ignition 3 = Starter
8	External Relay Pack – Relay #2	1 = Accessory **2 = Ignition (Default)** 3 = Starter
9	Not Used	
10	Reset Programming	3 = Reset all to defaults

Basic System Operation:

Warning: The parking/emergency brake should always be set when the Idleright is active.

The Idleright Fuel Management System will automatically start and idle the vehicle's engine if ALL of the following criteria are met:

1. The ignition is OFF
2. The vehicle's warning light system is turned on
3. The hood is closed
4. The brake pedal is NOT depressed.
5. The programmed voltage trip point is measured by the module.

If the vehicle is idling under the control of the Idleright Fuel Management System, the vehicle's engine will automatically shutdown if ANY of the following conditions occur:

1. The hood is opened
2. The brake pedal is pressed
3. The programmed Engine Idle Time expires

No other input from the vehicle operator is required. To ensure the Idleright Fuel Management System will function properly, it is important to test the system and its programming prior to releasing the vehicle into service. While the default programming is suitable for most gasoline vehicles, there are other factors that could lead to system failures. For instance, an aged vehicle, with an old worn battery and an inefficient warning light system will require a higher detection voltage and longer runtime than a brand new vehicle with an LED warning system. Other factors like climate should also be taken into consideration. For example, colder climates may require higher detection voltage and longer crank time than warmer climates. Since the

Idleright Fuel Management System does not measure outside temperature, it is important to do testing to ensure the system will operate properly in the field.

Under heavy loads, the battery may not have enough power to keep all equipment operating and start the vehicle. It is important to keep the load on the battery as low as possible while operating the Idleright. Note that higher detection voltages will be needed for heavier loads than for lighter loads. Therefore, it is recommended that all testing be performed with the vehicle under the heaviest load it is likely to encounter in the field. It is equally important to ensure that all vehicle operators are suitably trained to minimize power loads while the Idleright is active.

WARNING: Setting the trip voltage too low may cause the vehicle to have insufficient power to start the vehicle under load, and it may also cause equipment on the vehicle, including the lightbar control unit, to generate faults. For most vehicles, the trip voltage should be 11.5 VDC or higher. Never set the trip voltage below 11 VDC for standard vehicles. Lower voltages are only for use in special applications, and require very low loads and extensive testing.

In order to test the Idleright unit, turn on the lightbar and ensuring the vehicle starts when battery voltage is low. Note that the vehicle should be outdoors or in a well-ventilated area during testing. Adjust the programming as needed for optimal performance. If technical issues are encountered, please visit www.idleright.com or call Technical Support at 1-800-524-9900 Ext. 185 for assistance.

Recommended Load Management:

The Idleright System operates most efficiently under LOW to MODERATE loads. A heavy load will drain the battery rapidly, requiring the engine to run more frequently and for longer periods of time, thereby reducing fuel savings. Following are some general suggestions for maximizing performance and efficiency:

- **All unneeded loads MUST be turned off. Do not operate the heat, air conditioning, or other large loads while the Idleright is active, or it may fail to start the vehicle.**
- **Use only the minimum number of warning lights needed for safe visibility in each application.** For example, for traffic control, alley lights are likely not needed, and in many cases, only the front or rear flashing lights will be needed.
- LED lightbars are far more efficient than other technologies, especially strobe, and will maximize performance.

Future Reference:

Place this operator manual and the operator instructions in the vehicle glove box for operator use and future reference. Operators should read the operator instructions before using an Idleright-equipped vehicle for the first time.

System Diagnostics:

In the event of a fault or system failure, the LED indicator will flash as follows:

- Rapid On/Off Flashing – Over Current Detected. The Idleright System has detected an over current condition. All outputs have been shut down to prevent damage to the system.
- Slow On/Off Flashing – Failed to Start. The Idleright System has attempted to start the vehicle 3 times and failed. Common causes of this are a weak vehicle battery or electrical system, a Voltage trip point set too low or Initial Crank Time set too low.

Troubleshooting/FAQ's:

Q: How do I know that the Idleright runtime is programmed correctly?
A: Test the vehicle by allowing it to run for a day. After the first couple of hours, the time between vehicle starts should be fairly constant. If it is decreasing steadily, then the runtime should be increased. If it is increasing steadily, then the runtime can be decreased.

Q: I have the Idleright set to the maximum runtime, but the time between starts is too short or keeps decreasing. What should I do?
A: The load is too high. These are some possible remedies:

- Decrease the load by turning off all non-essential accessories.
- If the time between starts is initially acceptable but becomes shorter after each start, even with the maximum runtime set, then the alternator is not charging the battery properly. A new alternator and/or belt may be needed, and for some vehicles, it may be desirable to install a high-idle module.
- If the time between starts is always too short, even with a good battery and charging system, and the vehicle has a very high-current lightbar, it may be necessary to replace the lightbar with a lower-current model.

Q: How do I know if the cranking time is set properly?
A: The cranking time should be adjusted according to environmental conditions. During summer months and in warm climates, the cranking time should be set to a shorter time. During winter months and in cold climates, the cranking time will probably need to be

increased. Set the cranking time to the shortest time that reliably starts the vehicle for each climate without over-cranking the starter.

IDLERIGHT™
FUEL MANAGEMENT SYSTEM

Manufactured by:

Havis-Shields
EQUIPMENT CORPORATION

Patent Pending